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EXAMINER	
BAREFORD, KATHERINE A	
ART UNIT	**PAPER NUMBER**
1715	
NOTIFICATION DATE	**DELIVERY MODE**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/500,961	OHARA, MINORU	
	Examiner	Art Unit	
	Katherine A. Bareford	1715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 March 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *73-86* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *73-86* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 7, 2011 has been entered.

The amendment filed March 7, 2011 with the RCE submission has been received and entered. With the entry of the amendment, claims 1-72 and 87-88 have been canceled, and claims 73-86 are pending for examination.

Claim Rejections - 35 USC § 112

2. The rejection of claims 73-88 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention is withdrawn due to the amendments of March 7, 2011 to clarify the language of claims 73 and 79 and cancel claims 87 and 88.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The rejection of claims 73-84 and 87-88 under 35 U.S.C. 103(a) as obvious over Clingman et al (US 5130163), as evidenced by "GE Silicones RTV 11" Data Sheet (hereinafter RTV 11 Sheet), and in view of Kang et al (US 5800695), Montierth (US 4411856), Watkins (US 4634623) and the admitted state of the prior art is withdrawn due to applicant's changes to the claim requirements.

5. Claims 73-84 are rejected under 35 U.S.C. 103(a) as obvious over Clingman et al (US 5130163), as evidenced by "GE Silicones RTV 11" Data Sheet (hereinafter RTV 11 Sheet), and in view of Kang et al (US 5800695), Montierth (US 4411856), and the admitted state of the prior art, <u>alone</u>, or <u>optionally</u>, further in view of Kilbourne et al (US 2709161).

Claims 73, 75, 78, 79, 81, 84: Clingman teaches a method of forming a thermal barrier coating by spray coating over a surface of a component. Column 1, lines 35-60. The component has cooling holes (perforations) made in it. Figure 2 and column 2, lines 15-50 (see perforations 22, for example). A masking process where masking plugs (pins) are inserted into the cooling holes is provided. Column 2, lines 55 through

column 3, line 20. Silicone rubber, in a viscous spreadable state is applied and forced into the holes, and then dried and hardened to an elastomeric body. Column 2, line 55 through column 3, line 20. The masking plug can thus be composed of silicone rubber. Column 2, lines 60-65. The rubber would be "elastic" as it is described as "elastomeric". Column 3, lines 10-20. The masking process includes forming the plugs so that they do not protrude above the surface of the component. Column 3, lines 1-11 and figure 4. Then blasting treatment process is provided where the surface of the component is blasted and coarsened (roughened) to prepare the surface for coating. Column 3, lines 20-30. Then a spray coating process is provided where a thermal barrier coating is formed by spray coating over the surface of the coarsened component. Column 3, lines 30-65 and column 1, lines 35-45. As to filling the holes with "liquid elastic body", Clingman teaches that the exemplary silicone rubber that is used is RTV-11 from General Electric (column 2, lines 60-65) and that it is applied and cured (column 3, lines 10-20). RTV 11 Sheet indicates that the cured RTV 11 has a shrinkage of 0.6 %. Page 2. RTV 11 Sheet also indicates that the material is easily pourable in consistency. Page 2. Since Clingman teaches the use of a flowable, spreadable silicone rubber sealant of RTV 11; and RTV 11 is inherently understood to be easily pourable, one of ordinary skill in the art would understand that the state of the silicone rubber used in Clingman is a "liquid", or even if the flowable, spreadable silicone rubber sealant of Clingman is not understood to inherently be a liquid, the teaching of Clingman of using a flowable,

spreadable material would at least suggest that the material be in the form of a liquid, as the broad teaching of flowable, spreadable material would be inclusive of liquid.

(A) Clingman as evidenced by RTV 11 Sheet does not specifically teach that liquid silicone rubber is injected into the cooling holes, where an injection amount of the liquid is adjusted so that the surface of the elastic body injected into each of the cooling holes protrudes above the surface when injected, and so that the masking pins after hardening and shrinking by about 10% do not protrude.

Kang teaches providing maskant into cooling holes in a gas turbine engine component. Column 1, lines 1-10. The maskant is provided into the holes by injecting into the cooling holes in a liquid state, and then cured to harden. Column 2, lines 15-45. The maskant is filled into the cooling holes so that the maskant is flush with the surface of the component. Column 2, lines 25-30. Kang teaches that when injecting the maskant, care should be taken that the maskant is not present on surfaces intended to be coated. Column 2, lines 39-40 and figure 4. Kang further teaches to remove any maskant that is present on the outside of the component. Column 2, lines 40-41.

Montierth teaches that when making masking members using silicones, for example, care should be taken to account for any shrinkage which occurs in the fabrication of the mask. Column 8, lines 5-35 and 55-65. Montierth teaches that by varying the polymer mixtures and/or curing schedules the shrinkage and thus relative dimensions of the mask may be controllably varied (column 14, lines 15-30, and the tables of column 14-16 give examples of total shrinkage between 2.7 and 4.6 volume %).

(A) (a) As to Clingman, as evidenced by RTV 11 Sheet, further in view of Kang and Montierth: It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clingman, as evidenced by RTV 11 Sheet, to inject the maskant in a liquid state as suggested by Kang, with an expectation of providing desirable protected surfaces because Clingman, as evidenced by RTV 11 Sheet, suggests to provide the silicone rubber maskant in a liquid state and force it into the holes followed by curing and hardening, and Kang teaches that a conventional desirable way to force maskant into cooling holes is to inject it in a liquid form and then cure to harden. Furthermore, as to the adjusting of the amount of the liquid elastic so as to protrude when injected and after hardening and shrinking about 10% by volume to not protrude, it would have been obvious to modify Clingman as evidenced by RTV 11 Sheet and in view of Kang to provide that the liquid elastics protrudes when injected and hardens and shrinks so that the masking pin does not protrude above the surface of the component as suggested by Montrieth in order to provide a desirable placement of the mask, because Clingman provides adjusting the maskant to a desired position and height of the exemplary maskant which in use is to be even with the surface of the component and not protrude (column 3, lines 5-10 and figure 5) and Kang wants the cooling holes to be filled so that the maskant is flush with the surface of the component and maskant is not on surfaces intended to be coated, and further shows a slight protrusion on coating (column 2, lines 25-30, 35-40, figure 4) and as shown by RTV 11 sheet, the exemplary RTV 11 maskant has a known shrinkage amount, or at the least

would be expected to shrink at least some degree, during curing, and Montierth provides that one of ordinary skill in the art would take this known or expected shrinkage amount into consideration when applying the material when forming a mask, so that a desired amount of coverage occurs so that what is desired to be masked is actually masked during the coating process, so it would be suggested that the maskant used would slightly protrude on filling and shrink to not protrude, such as by being even with the surface, when the material has hardened, and coating is to be applied, since, for example, if a material is to be even with a surface after hardening, and shrinks on hardening, it needs to be provided in an amount of more than even (protruding) before shrinking; and moreover, as to the percentage of shrinking, while Clingman uses an exemplary masking material of RTV 11 which has a small shrinking percentage (column 2, lines 60-61), Clingman is not limited to this material (see claim 1 of Clingman, and column 1, lines 40-45, which only requires a viscous spreadable maskant), and Montierth teaches that a variety of elastomer masking materials can be used for masking with silcones, for example, and thus these materials can have a variety of shrinkage rates which would be taken into consideration and controlled for the best results, indicating that one of ordinary skill in the art would understand that different materials have different shrinkage rates, and that this shrinkage rate would be taken into consideration to give the desired final placement results, such that a certain amount and volume of the maskant would be provided for a material that shrinks 1 volume % and a different amount and volume of the maskant would be provided for a material

that shrinks 5 volume %. Since shrinkage is a result effective variable to be taken into consideration as described by Montierth, one of ordinary skill in the art would be suggested to optimize the percentage of shrinking and amounts used based on this shrinkage by routine experimentation from the suggestion in Montierth to controllably vary the shrinkage dependent on the material used, which would provide the claimed adjusting of the amount of the liquid elastic so as to protrude when injected and after hardening and shrinking about 10% by volume to not protrude. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Applicant has made no showing of unexpected results for a specific shrinkage of about 10%.

(A) (b) As to Clingman, as evidenced by RTV 11 Sheet, further in view of Kang and Montierth and Kilbourne: Kilbourne further teaches that it is known that silicone rubber (silicone elastomer) (column 1, lines 10-25 and 49-50) can have various shrinkage on curing, including volume shrinkage of 9.6, 12.2, 6.1% under various conditions (column 3, lines 50-55 and Table III). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clingman, as evidenced by RTV 11 Sheet, to inject the maskant in a liquid state as suggested by Kang, with an expectation of providing desirable protected surfaces because Clingman, as evidenced by RTV 11 Sheet, suggests to provide the silicone rubber maskant in a liquid state and force it into the holes followed by curing and hardening, and Kang teaches that a

conventional desirable way to force maskant into cooling holes is to inject it in a liquid form and then cure to harden. Furthermore, as to the adjusting of the amount of the liquid elastic so as to protrude when injected and after hardening and shrinking about 10% by volume to not protrude, it would have been obvious to modify Clingman as evidenced by RTV 11 Sheet and in view of Kang to provide that the liquid elastics protrudes when injected and hardens and shrinks so that the masking pin does not protrude above the surface of the component as suggested by Montrieth and Kilbourne in order to provide a desirable placement of the mask, because Clingman provides adjusting the maskant to a desired position and height of the exemplary maskant which in use is to be even with the surface of the component and not protrude (column 3, lines 5-10 and figure 5) and Kang wants the cooling holes to be filled so that the maskant is flush with the surface of the component and maskant is not on surfaces intended to be coated, and further shows a slight protrusion on coating (column 2, lines 25-30, 35-40, figure 4) and as shown by RTV 11 sheet, the exemplary RTV 11 maskant has a known shrinkage amount, or at the least would be expected to shrink at least some degree, during curing, and Montierth provides that one of ordinary skill in the art would take this known or expected shrinkage amount into consideration when applying the material when forming a mask, so that a desired amount of coverage occurs so that what is desired to be masked is actually masked during the coating process, so it would be suggested that the maskant used would slightly protrude on filling and shrink to not protrude, such as by being even with the surface, when the material has hardened, and

coating is to be applied, since, for example, if a material is to be even with a surface after hardening, and shrinks on hardening, it needs to be provided in an amount of more than even (protruding) before shrinking; and moreover, as to the percentage of shrinking, while Clingman uses an exemplary masking material of RTV 11 which has a small shrinking percentage (column 2, lines 60-61), Clingman is not limited to this material (see claim 1 of Clingman, and column 1, lines 40-45, which only requires a viscous spreadable maskant), and Montierth teaches that a variety of elastomer masking materials can be used for masking with silcones, for example, and thus these materials can have a variety of shrinkage rates which would be taken into consideration and controlled for the best results, indicating that one of ordinary skill in the art would understand that different materials have different shrinkage rates, and that this shrinkage rate would be taken into consideration to give the desired final placement results, such that a certain amount and volume of the maskant would be provided for a material that shrinks 1 volume % and a different amount and volume of the maskant would be provided for a material that shrinks 5 volume %. Kilbourne further provides that silicone rubbers (elastomers) are known to have shrinkage rates on curing of 9.6 or 12.2 volume %, for example, in the range of 10 volume %. Since shrinkage is a result effective variable to be taken into consideration as described by Montierth, and it is known that silicone rubbers can have volume shrinkage rate on curing in the 10 volume % range as described by Kilbourne, one of ordinary skill in the art would be suggested to optimize the percentage of shrinking and amounts used based on this shrinkage by

routine experimentation from the suggestion in Montierth to controllably vary the shrinkage dependent on the material used, which would provide the claimed adjusting of the amount of the liquid elastic so as to protrude when injected and after hardening and shrinking about 10% by volume to not protrude. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). Applicant has made no showing of unexpected results for a specific shrinkage of about 10%.

(B) As to the cooling holes being formed in the surface of the component such that the cooling holes extend to an air passageway slot formed in the component, Kang provides that it is known when providing cooling holes in gas turbine engine components for the cooling holes 4 to be formed in the surface of the component such that the cooling holes extend to an air passageway slot (cooling passage 2) formed in the component (Figure 2 and column 2, lines 15-30). The previously cited references do not specifically teach that each of the cooling holes have a diameter that is larger than a width of the air passageway slot (claims 73, 79), or that the component is a combustion transition piece of a gas turbine engine with the cooling holes made in a internal periphery surface of a wall constituting the combustor transition piece (claims 75, 81). Clingman does teach that the component is to be used in a gas turbine engine combustor, for example (column 2, lines 20-25) and the cooling holes and the coating

can be provided in an internal periphery surface of the component (column 1, lines 35-60 and column 2, lines 30-35, the inside lamina 12 is the exposed surface to be treated).

However, the admitted state of the prior art (pages 1-3 of the specification and figures 4 and 9) teaches that turbine components to be provided with thermal barrier coatings on an internal periphery surface of a wall commonly include combustor transition pieces (103), and these are conventionally provided with air outlet holes (cooling holes) 5 that extend to air passageway slots 1, where the cooling holes are masked before the thermal barrier coating is applied. The admitted state of the prior art further provides that diameters of the holes 5 are larger than the width of the air passageway slots 1 (see page 2 and figures 4 and 9).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clingman, as evidenced by RTV 11 Sheet, and in view of Kang and Montierth, <u>alone</u> or <u>optionally</u>, further in view of Kilbourne, to use the process on a combustor transition piece, for example with cooling holes with diameters larger than the width of air passageway slots that the cooling holes extend to as suggested by the admitted state of the prior art, with an expectation of providing desirable protected surfaces because Clingman, as evidenced by RTV 11 Sheet, and in view of Kang and Montierth, <u>alone</u> or <u>optionally</u>, further in view of Kilbourne teaches to provide thermal barrier coatings on internal periphery of components to be used in a gas turbine engine combustor (see Clingman, column 1, lines 35-60 and column 2, lines 20-35), and the admitted state of the prior art teaches that a conventional part of a

combustor in a gas turbine engine that contains cooling holes to be treated on a internal periphery with a thermal barrier coating is a combustor transition piece that has cooling holes with diameters larger than the width of air passageway slots that the cooling holes extend to.

Claims 74, 80: Clingman provides that the cooling holes are not "drilled through" as the holes do not extend all the way through the component, for example. Column 2, lines 15-50 and figure 2 (shrouded side perforations 18 are offset relative to perforations 22).

Claims 76, 82: Clingman teaches that the material of the masking pin is elastic and resistant to blasting (column 3, lines 25-30), is resistant to the heat caused by the spray coating (as the plug remains after thermal spray coating and must be removed, column 4,lines 25-35), has stripping easiness as it can be entirely removed after coating (as the plug is stripped out, and as the air flow remains the same after the treatment, column 5, lines 1-10), and as to adherence and wetness to prevent thermal barrier coating material from accumulation, teaches that the bond coat and top coat do not readily adhere to the plug material and almost all particles do not adhere (column 3, lines 45-55 and column 4, lines 1-6).

Claims 77, 83: Clingman provides that the masking plug can be composed of silicone rubber. Column 2, lines 60-65. The rubber would be "elastic" as it is described as "elastomeric". Column 3, lines 10-20.

6. Claims 85-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clingman, as evidenced by RTV 11 Sheet, and in view of Kang, Montierth and the admitted state of the prior art, alone or optionally, further in view of Kilbourne, as applied to claims 73-84 above, and further in view of Emer (US 6380512).

Clingman, as evidenced by RTV 11 Sheet, and in view of Kang, Montierth and the admitted state of the prior art, alone or optionally, further in view of Kilbourne, teaches all the features of these claims except the specific chamfering of the thermal barrier coating around the cooling holes with the masking pins remaining in the holes. Clingman does teach that the top coat may accumulate as a projecting lip 48 and may sometimes completely shroud the hole, which should be mechanically pieced through the top coat over the plug of maskant. Column 4, lines 5-30.

Emer teaches that it is well known that after coating over components with cooling holes with coatings such as thermal barrier coatings, to remove coating material which may have obstructed any or all of the cooling holes to reestablish the cooling hole diameter and/or establish a proper airflow using a laser. Column 2, lines 35-60.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Clingman, as evidenced by RTV 11 Sheet, and in view of Kang, Montierth and the admitted state of the prior art, alone or optionally, further in view of Kilbourne to chamfer (understood, by definition, to mean cut off the edge or corner) the thermal barrier coating around the cooling holes while the masking pins remain in the cooling holes after forming the thermal barrier coating as suggested by

Clingman and Emer, with an expectation of providing desirable protected surfaces because Clingman provides the suggestion of mechanically piercing holes that have been obstructed with coating while the maskant is still present, and Emer teaches that is also well known to remove coating material which may have obstructed any or all of the cooling holes to reestablish the cooling hole diameter and/or establish a proper airflow after coating, indicating that it may be desirable to open the holes after complete or partial obstruction, and this reopening after partial obstruction would by definition chamfer the thermal barrier coating around the cooling holes, since the edge of the coating would be cut off.

7. Loringer (US 6573474) teaches that it is known to provide an angled surface on a thermal barrier coating by drilling around the hole area. Figures 1-2 and column 2, lines 40-50.

Response to Arguments

8. Applicant's arguments with respect to claims 73-86 have been considered but are moot in view of the new ground(s) of rejection.

As to the specific shrinkage of the maskant by about 10%, applicant argues that the shrinkage of the masking pins by about 10% in volume is critical because the resulting masking pins do not protrude above the internal periphery of the component, and if the shrinkage was less than 10% in volume the resulting masking pin may

protrude, and if more than 10% in volume, the masking pin may be excessively recessed. Applicant argues that Clingman and Kang doe not disclose a specific shrinkage and RTV 11 Sheet only discloses 0.6% shrinkage. As to Montierth, applicant argues that it only discloses total volume shrinkage of 2.7 to 4.6 % (and Watkins only discloses linear shrinkage), and thus it is not suggested or disclosed to provide that the masking pins, "after hardening and shrinking by about 10% in volume do not protrude above the surface of the component" as required by the independent claims.

The Examiner has reviewed these arguments, however, the rejection above is maintained. The Examiner notes that as to the 10 % volume shrinkage now required, Watkins has been removed, and Kilbourne optionally provided. While none of the references specifically discloses all of the features of providing masking pins that , "after hardening and shrinking by about 10% in volume do not protrude above the surface of the component", the combined teaching of the references would suggest this feature. Specifically as noted above, the references to Clingman and Kang provide that it is desired for the masking pin material to not protrude when coating (after curing) but rather be level with the surface. Further, RTV 11 Sheet clarifies that even the exemplary masking material used by Clingman would have some shrinkage. Montierth specifically provides that when using masking members made from silicones, care should be taken to account for shrinkage which occurs in the fabrication of the mask, which shrinkage can vary depending on the specific maskant used. Therefore, as noted in the rejection above, shrinkage is clearly a result effective variable which would be

suggested to be optimized and accounted for in the process, which would mean that a 10% volume shrinkage rate would be a rate that can be optimized to and would be accounted for in the application and curing process, so the desired position even with the surface of the component would be achieved. Kilbourne is optionally provided as further indicating the obviousness of an about 10% in volume shrinkage as it shows that silicone rubbers are known to have shrinkage volumes on curing in this range. While applicant argues that the shrinkage "by about 10% in volume" is critical to get the required non-protrusion, Montierth would indicate that this is not the case, rather, the amount of shrinkage (whatever it may be -- 1%, 5%, 10% by volume) is determined or known and the use of material is such that such shrinkage is taken into account (column 8, lines 55-65, column 14, lines 20-30). In other words, material would be provided in volume amounts and position to allow for shrinkage to the desired final size and shape based on the known shrinkage volume. Applicant has made no showing that use of a material that shrinks 1% or 5% or 20% by volume would have different results as compared to a 10 volume % shrinkage as long as this shrinkage amount is taken into consideration as is conventional in the art as shown by Montierth.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy H. Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katherine A. Bareford/
Primary Examiner, Art Unit 1715